

**Amendment and Response**

Serial No.: 10/034,993

Confirmation No.: 1113

Filed: 28 December 2001

For: MODULAR SYSTEMS AND METHODS FOR USING SAMPLE PROCESSING DEVICES

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**Amendments to the Claims**

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1. (CURRENTLY AMENDED) A method of adapting a sample processing system for use with a selected sample processing device, the method comprising:

providing a sample processing system that comprises:

a base plate adapted to receive a sample processing device, the base plate comprising a thermal structure, an electrically powered device, and a photovoltaic cell;

a drive system adapted to rotate the base plate about an axis of rotation;

a system controller; and

connection apparatus located between the base plate and the drive system, the connection apparatus releasably attaching the base plate to the drive system for rotation of the base plate about the axis of rotation, wherein the connection apparatus comprises:

a drive side connector fixedly attached to the drive system;

a plate side connector fixedly attached to the base plate;

operably attaching the base plate to the drive system by mating the drive side connector with the plate side connector; [[and]]

providing electrical power to the electrically powered device from the photovoltaic cell; and  
rotating the base plate about the axis of rotation using the drive system.

2. (ORIGINAL) A method according to claim 1, further comprising identifying the base plate to the system controller.

3. (ORIGINAL) A method according to claim 2, wherein identifying the base plate to the system controller comprises optically sensing indicia on the base plate.

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4. (ORIGINAL) A method according to claim 2, wherein the identifying comprises transmitting a base plate identity through the connection apparatus.
5. (ORIGINAL) A method according to claim 4, wherein transmitting a base plate identity through the connection apparatus comprises electrically transmitting the base plate identity through electrical connectors on the drive side connector and the plate side connector.
6. (ORIGINAL) A method according to claim 4, wherein transmitting a base plate identity through the connection apparatus comprises mechanically transmitting the base plate identity through mating mechanical structures on the drive side connector and the plate side connector.
7. (ORIGINAL) A method according to claim 4, wherein transmitting a base plate identity through the connection apparatus comprises optically transmitting the base plate identity through optical transmission structures on the drive side connector and the plate side connector.
8. (CURRENTLY AMENDED) A method according to claim 1, wherein the base plate further comprises an electrically powered device, and wherein the method further comprises providing electrical power to the electrically powered device through the drive side connector and the plate side connector of the connection apparatus.
9. (CURRENTLY AMENDED) A method according to claim 8, wherein providing electrical power to the electrically powered device through the connection apparatus comprises control over delivery of the electrical power by the system controller.
10. (CURRENTLY AMENDED) A method according to claim [(8)] 1, wherein the electrically powered device comprises a thermoelectric module in thermal communication with the thermal structure on the base plate.

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11. (CURRENTLY AMENDED) A method according to claim [[8]] 1, wherein the electrically powered device comprises an electrical resistance heater in thermal communication with the thermal structure on the base plate.
12. (CURRENTLY AMENDED) A method according to claim [[8]] 1, wherein the electrically powered device comprises a temperature sensor.
13. (CURRENTLY AMENDED) A method according to claim [[8]] 1, wherein the electrically powered device comprises a base plate microprocessor.
14. (ORIGINAL) A method according to claim 13, wherein the base plate further comprises a temperature sensor, and wherein the method comprises:  
providing a signal to the base plate microprocessor from the temperature sensor; and  
processing the signal from the temperature sensor using the base plate microprocessor.
15. (ORIGINAL) A method according to claim 14, wherein the base plate microprocessor provides a processed signal to the system controller based on the signal received by the base plate microprocessor from the temperature sensor.
16. (ORIGINAL) A method according to claim 15, wherein the processed signal passes through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.
17. (ORIGINAL) A method according to claim 1, wherein the base plate further comprises a temperature sensor in thermal communication with the thermal structure, and wherein the

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method further comprises providing a signal from the temperature sensor to the system controller.

18. (ORIGINAL) A method according to claim 17, wherein providing a signal from the temperature sensor to the system controller comprises passing the signal through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.

19. (CANCELED)

20. (CANCELED)

21. (CURRENTLY AMENDED) A method according to claim [[19]] 1, wherein the base plate further comprises a base plate microprocessor, and wherein the method comprises:

- providing electrical energy to the base plate microprocessor from the photovoltaic cell;
- providing a signal to the base plate microprocessor from the temperature sensor; and
- processing the signal from the temperature sensor using the base plate microprocessor.

22. (ORIGINAL) A method according to claim 21, wherein the base plate microprocessor provides a processed signal to the system controller based on the signal received by the base plate microprocessor from the temperature sensor.

23. (ORIGINAL) A method according to claim 21, wherein the processed signal passes through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.

24. (CANCELED)

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25. (ORIGINAL) A method of adapting a sample processing system for use with a selected sample processing device, the method comprising:

    providing a sample processing system that comprises:

        a base plate adapted to receive a sample processing device, the base plate comprising a thermal structure, an electrically powered device, and a generator coil operatively attached to the base plate;

        a drive system adapted to rotate the base plate about an axis of rotation;  
        a system controller; and

    rotating the base plate about the axis of rotation using the drive system; and

    providing a magnetic field proximate the base plate such that the generator coil passes through the magnetic field while the base plate is rotating to generate electricity that powers the electrically powered device on the base plate.

26. (CURRENTLY AMENDED) A method according to claim [[24]] 25, further comprising identifying the base plate to the system controller.

27. (CURRENTLY AMENDED) A method according to claim [[24]] 25, wherein the electrically powered device comprises a thermoelectric module in thermal communication with the thermal structure on the base plate.

28. (CURRENTLY AMENDED) A method according to claim [[24]] 25, wherein the electrically powered device comprises an electrical resistance heater in thermal communication with the thermal structure on the base plate.

29. (CURRENTLY AMENDED) A method according to claim [[24]] 25, wherein the electrically powered device comprises a temperature sensor.

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30. (CURRENTLY AMENDED) A method according to claim [[24]] 25, wherein the electrically powered device comprises a base plate microprocessor.
31. (CURRENTLY AMENDED) A method according to claim [[29]] 30, wherein the base plate further comprises a temperature sensor, and wherein the method comprises:
  - providing a signal to the base plate microprocessor from the temperature sensor; and
  - processing the signal from the temperature sensor using the base plate microprocessor.
32. (CURRENTLY AMENDED) A method according to claim [[30]] 31, wherein the base plate microprocessor provides a processed signal to the system controller based on the signal received by the base plate microprocessor from the temperature sensor.
33. (CURRENTLY AMENDED) A method according to claim [[24]] 25, wherein the base plate further comprises a temperature sensor in thermal communication with the thermal structure, and wherein the method further comprises providing a signal from the temperature sensor to the system controller.
34. (CURRENTLY AMENDED) A sample processing system comprising:
  - a base plate adapted to receive a sample processing device on a top surface of the base plate, the base plate comprising a thermal structure exposed on the top surface of the base plate,
  - an electrically powered device, and a photovoltaic cell operably connected to supply electric energy to the electrically powered device;
  - a drive system adapted to rotate the base plate about an axis of rotation;
  - a system controller; and
  - connection apparatus located between the base plate and the drive system, the connection apparatus releasably attaching the base plate to the drive system for rotation of the base plate

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about the axis of rotation, wherein the connection apparatus comprises a drive side connector fixedly attached to the drive system and a plate side connector fixedly attached to the base plate; wherein the plate side connector releasably mates with the drive side connector to operably attach the base plate to the drive system, whereby the drive system is capable of rotating the base plate about the axis of rotation.

35. (CURRENTLY AMENDED) A method according to claim [[33]] 34, further comprising identification indicia identifying a characteristic of the base plate.

36. (CURRENTLY AMENDED) A method according to claim [[34]] 35, wherein the identification indicia is optically readable.

37. (CURRENTLY AMENDED) A method according to claim [[34]] 35, wherein the identification indicia comprises mating mechanical structures on the drive side connector and the plate side connector.

38. (CURRENTLY AMENDED) A method according to claim [[33]] 34, wherein the connection apparatus comprises electrical connectors on the drive side connector and the plate side connector, whereby electrical signals pass between the base plate and the system controller through the electrical connectors.

39. (CURRENTLY AMENDED) A method according to claim 34, 33, wherein the base plate further comprises an electrically powered device, and wherein the drive side connector and the plate side connector comprise electrical power transmission structures in electrical communication with the electrically powered device.

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40. (CURRENTLY AMENDED) A method according to claim [[38]] 34, wherein the electrically powered device comprises a thermoelectric module in thermal communication with the thermal structure on the base plate.
41. (CURRENTLY AMENDED) A method according to claim [[38]] 34, wherein the electrically powered device comprises an electrical resistance heater in thermal communication with the thermal structure on the base plate.
42. (CURRENTLY AMENDED) A method according to claim [[38]] 34, wherein the electrically powered device comprises a temperature sensor.
43. (CURRENTLY AMENDED) A method according to claim [[38]] 34, wherein the electrically powered device comprises a base plate microprocessor in communication with the electrically powered device and the system controller.
44. (CURRENTLY AMENDED) A method according to claim [[38]] 43, wherein the base plate microprocessor is in communication with the system controller through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.
45. (CURRENTLY AMENDED) A method according to claim [[33]] 34, wherein the base plate further comprises a temperature sensor in thermal communication with the thermal structure, and wherein the temperature sensor is in communication with the system controller.
46. (CURRENTLY AMENDED) A method according to claim [[44]] 45, wherein the temperature sensor is in communication with the system controller through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.

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47. (CANCELED)

48. (CANCELED)

49. (CURRENTLY AMENDED) A method according to claim [[33]] 34, further comprising an electromagnetic energy source arranged to direct electromagnetic energy towards a bottom surface of the base plate.

50. (CURRENTLY AMENDED) A method according to claim [[33]] 34, further comprising an electromagnetic energy source arranged to direct electromagnetic energy towards the top surface of the base plate.

51. (CURRENTLY AMENDED) A method according to claim [[33]] 34, further comprising a plurality of thermoelectric modules in thermal communication with the thermal structure.

52. (ORIGINAL) A sample processing system comprising:

a base plate adapted to receive a sample processing device on a top surface of the base plate, the base plate comprising a thermal structure, an electrically powered device, and a generator coil operatively attached to the base plate;

a drive system adapted to rotate the base plate about an axis of rotation;

a system controller;

connection apparatus located between the base plate and the drive system, the connection apparatus releasably attaching the base plate to the drive system for rotation of the base plate about the axis of rotation;

a magnetic field proximate the base plate, wherein the generator coil operatively attached to the base plate passes through the magnetic field when rotating the base plate about the axis of rotation using the drive system, and wherein the generator coil is operatively connected to the

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electrically powered device such that the generated electricity powers the electrically powered device on the base plate.

53. (CURRENTLY AMENDED) A system according to claim [[51]] 52, wherein the connection apparatus comprises electrical connectors on the drive side connector and the plate side connector, whereby electrical signals pass between the base plate and the system controller through the electrical connectors.

54. (CURRENTLY AMENDED) A system according to claim [[51]] 52, wherein the electrically powered device comprises a thermoelectric module in thermal communication with the thermal structure on the base plate.

55. (CURRENTLY AMENDED) A system according to claim [[51]] 52, wherein the electrically powered device comprises an electrical resistance heater in thermal communication with the thermal structure on the base plate.

56. (CURRENTLY AMENDED) A system according to claim [[51]] 52, wherein the electrically powered device comprises a temperature sensor.

57. (CURRENTLY AMENDED) A system according to claim [[51]] 52, wherein the electrically powered device comprises a base plate microprocessor in communication with the electrically powered device and the system controller.

58. (CURRENTLY AMENDED) A system according to claim [[56]] 57, wherein the base plate microprocessor is in communication with the system controller through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.

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59. (NEW) A method of adapting a sample processing system for use with a selected sample processing device, the method comprising:

providing a sample processing system that comprises:

a base plate adapted to receive a sample processing device, the base plate comprising a thermal structure, an electrically powered device, and a coil operatively attached to the base plate;

a drive system adapted to rotate the base plate about an axis of rotation;

a system controller; and

connection apparatus located between the base plate and the drive system, the connection apparatus releasably attaching the base plate to the drive system for rotation of the base plate about the axis of rotation, wherein the connection apparatus comprises:

a drive side connector fixedly attached to the drive system;

a plate side connector fixedly attached to the base plate;

operably attaching the base plate to the drive system by mating the drive side connector with the plate side connector;

generating electrical power to the electrically powered device by rotating the coil through a magnetic field; and

rotating the base plate about the axis of rotation using the drive system.

60. (NEW) A method according to claim 59, further comprising identifying the base plate to the system controller.

61. (NEW) A method according to claim 60, wherein identifying the base plate to the system controller comprises optically sensing indicia on the base plate.

62. (NEW) A method according to claim 60, wherein the identifying comprises transmitting a base plate identity through the connection apparatus.

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63. (NEW) A method according to claim 62, wherein transmitting a base plate identity through the connection apparatus comprises electrically transmitting the base plate identity through electrical connectors on the drive side connector and the plate side connector.

64. (NEW) A method according to claim 62, wherein transmitting a base plate identity through the connection apparatus comprises mechanically transmitting the base plate identity through mating mechanical structures on the drive side connector and the plate side connector.

65. (NEW) A method according to claim 62, wherein transmitting a base plate identity through the connection apparatus comprises optically transmitting the base plate identity through optical transmission structures on the drive side connector and the plate side connector.

66. (NEW) A method according to claim 59, wherein the method further comprises providing electrical power to the electrically powered device through the drive side connector and the plate side connector of the connection apparatus.

67. (NEW) A method according to claim 66, wherein providing electrical power to the electrically powered device through the drive side connector and the plate side connector of the connection apparatus comprises control over delivery of the electrical power by the system controller.

68. (NEW) A method according to claim 59, wherein the electrically powered device comprises a thermoelectric module in thermal communication with the thermal structure on the base plate.

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69. (NEW) A method according to claim 59, wherein the electrically powered device comprises an electrical resistance heater in thermal communication with the thermal structure on the base plate.
70. (NEW) A method according to claim 59, wherein the electrically powered device comprises a temperature sensor.
71. (NEW) A method according to claim 59, wherein the electrically powered device comprises a base plate microprocessor.
72. (NEW) A method according to claim 71, wherein the base plate further comprises a temperature sensor, and wherein the method comprises:  
providing a signal to the base plate microprocessor from the temperature sensor; and  
processing the signal from the temperature sensor using the base plate microprocessor.
73. (NEW) A method according to claim 72, wherein the base plate microprocessor provides a processed signal to the system controller based on the signal received by the base plate microprocessor from the temperature sensor.
74. (NEW) A method according to claim 73, wherein the processed signal passes through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.
75. (NEW) A method according to claim 59, wherein the base plate further comprises a temperature sensor in thermal communication with the thermal structure, and wherein the method further comprises providing a signal from the temperature sensor to the system controller.

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76. (NEW) A method according to claim 75, wherein providing a signal from the temperature sensor to the system controller comprises passing the signal through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.

77. (NEW) A method according to claim 59, wherein the base plate further comprises a base plate microprocessor, and wherein the method comprises:

providing electrical energy to the base plate microprocessor from the photovoltaic cell;  
providing a signal to the base plate microprocessor from the temperature sensor; and  
processing the signal from the temperature sensor using the base plate microprocessor.

78. (NEW) A method according to claim 77, wherein the base plate microprocessor provides a processed signal to the system controller based on the signal received by the base plate microprocessor from the temperature sensor.

79. (NEW) A method according to claim 77, wherein the processed signal passes through electrical connectors in the drive side connector and the plate side connector of the connection apparatus.